

Replacement Sheet
Sheet 1 of 36
Appl. No. 10/084,503; Filed: Feb 28, 2002
Dkt No. 1875.1760001; Group Unit: 2626
Inventors: THYSSEN et al.
Tel. No.: 202-371-2600
For: Efficient Excitation Quantization in a Noise Feedback
Coding System Using Correlation Techniques

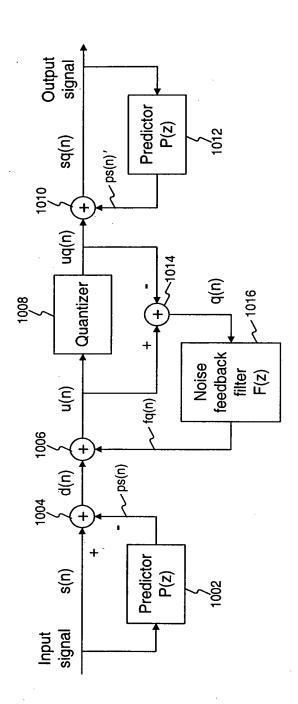


Figure 1 Conventional Noise Feedback Coding

Replacement Sheet Sheet 2 of 36 Appl. No. 10/084,503; Filed: Feb 28, 2002 Dkt No. 1875,1760001; Group Unit: 2626

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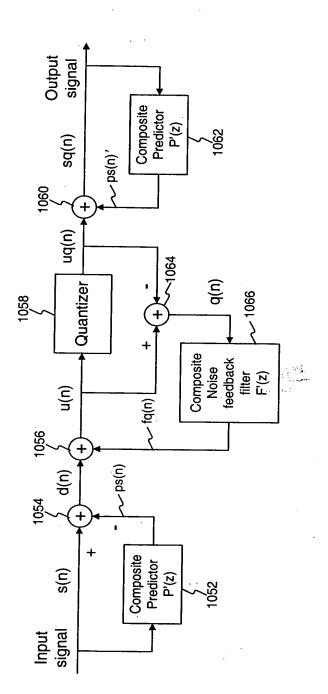


Figure 1A Noise Feedback Coding Using Composite Short-Term and Long-Term Predictors and Composite Short-Term and Long-Term Filter



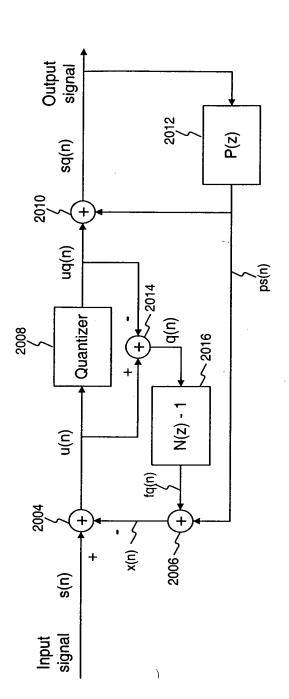


Figure 2 An alternative form of conventional Noise Feedback Coding

Replacement Sheet Sheet 4 of 36

Sheet 4 of 36

Appl. No. 10/084,503; Filed: Feb 28, 2002

Dkt No. 1875.1760001; Group Unit: 2626

Inventors: THYSSEN et al.

Tel. No.: 202-371-2600

For: Efficient Excitation Quantization in a Noise Feedback

Coding System Using Correlation Techniques

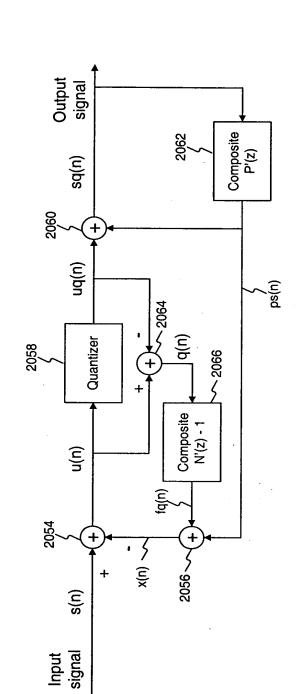


Figure 2A Noise Feedback Coding Using Composite Predictor and Composite Noise Filter

Replacement Sheet Sheet 5 of 36 Appl. No. 10/084,503; Filed: Feb 28, 2002 Dkt No. 1875.1760001; Group Unit: 2626 Inventors: THYSSEN et al.
Tel. No.: 202-371-2600
For: Efficient Excitation Quantization in a Noise Feedback

Coding System Using Correlation Techniques

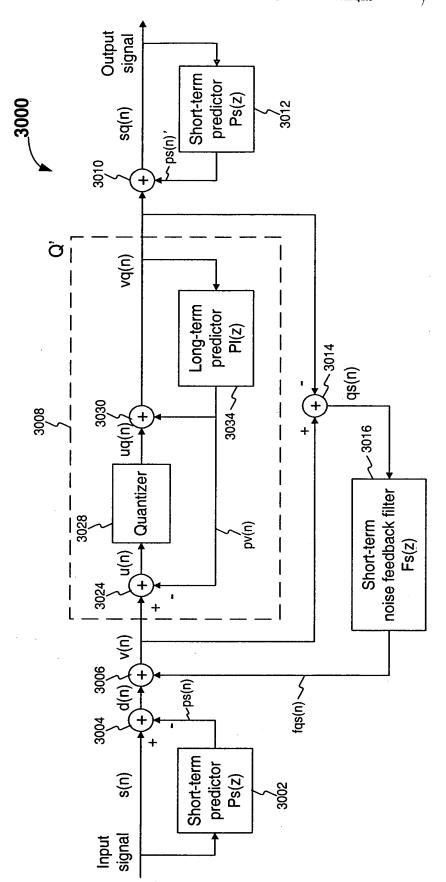


Figure 3 Noise Feedback Coding with short-term and long-term prediction but only short-term noise spectral shaping

Replacement Sheet
Sheet 6 of 36
Appl. No. 10/084,503; Filed: Feb 28, 2002
Dkt No. 1875.1760001; Group Unit: 2626
Inventors: THYSSEN et al.
Tel. No.: 202-371-2600
For: Efficient Excitation Quantization in a Noise Feedback
Coding System Using Correlation Techniques

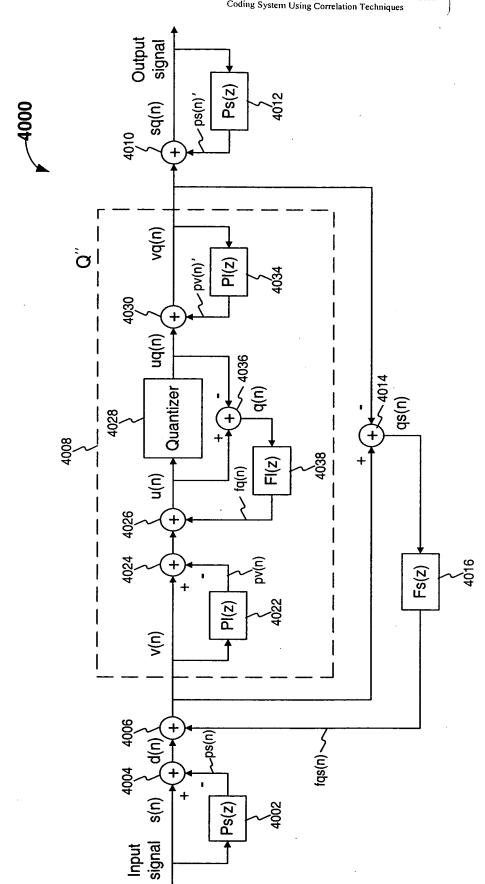


Figure 4 Nested two-stage Noise Feedback Coding structure with short-term and long-term prediction and short-term and long-term noise spectral shaping

Replacement Sheet Sheet 7 of 36 Appl. No. 10/084,503; Filed: Feb 28, 2002 Dkt No. 1875.1760001; Group Unit: 2626 Inventors: THYSSEN et al. Tel. No.: 202-371-2600

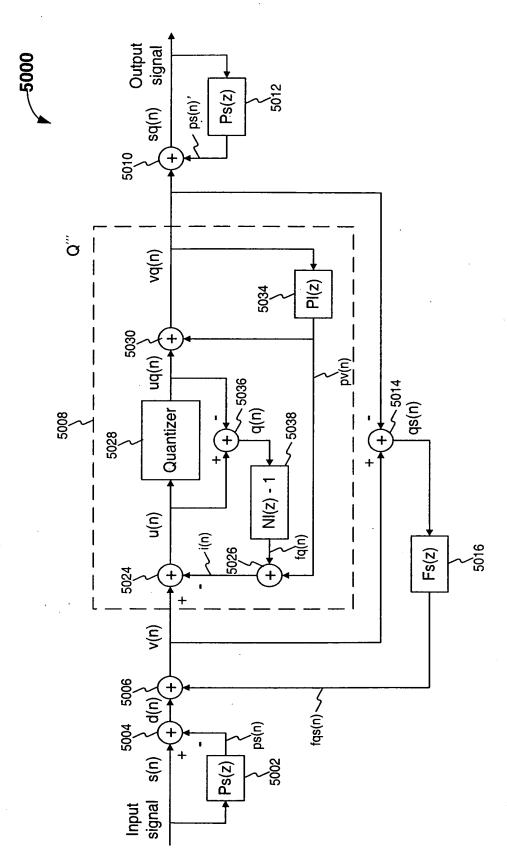
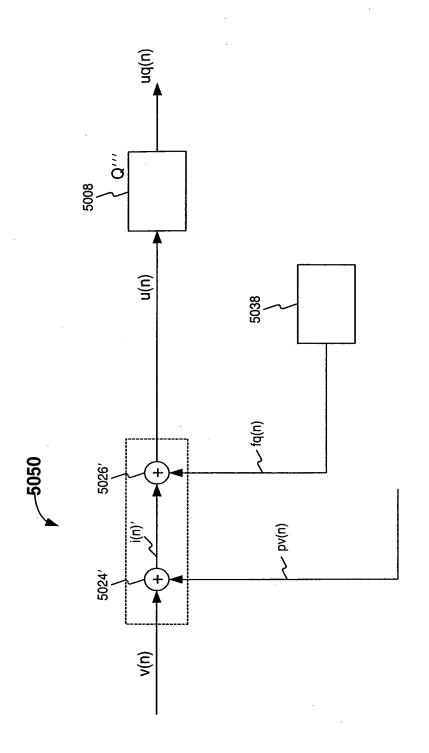


Figure 5 An alternative nested two-stage Noise Feedback Coding structure with short-term and long-term prediction and short-term and long-term noise spectral shaping



Replacement Sheet
Sheet 8 of 36
Appl. No. 10/084,503; Filed: Feb 28, 2002
Dkt No. 1875.1760001; Group Unit: 2626
Inventors: THYSSEN et al.
Tel. No.: 202-371-2600
For: Efficient Excitation Quantization in a Noise Feedback
Coding System Using Correlation Techniques

Replacement Sheet Replacement Sneet
Sheet 9 of 36
Appl. No. 10/084,503; Filed: Feb 28, 2002
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Inventors: THYSSEN et al.
Tel. No.: 202-371-2600
For: Efficient Excitation Quantization in a Noise Feedback

Coding System Using Correlation Techniques

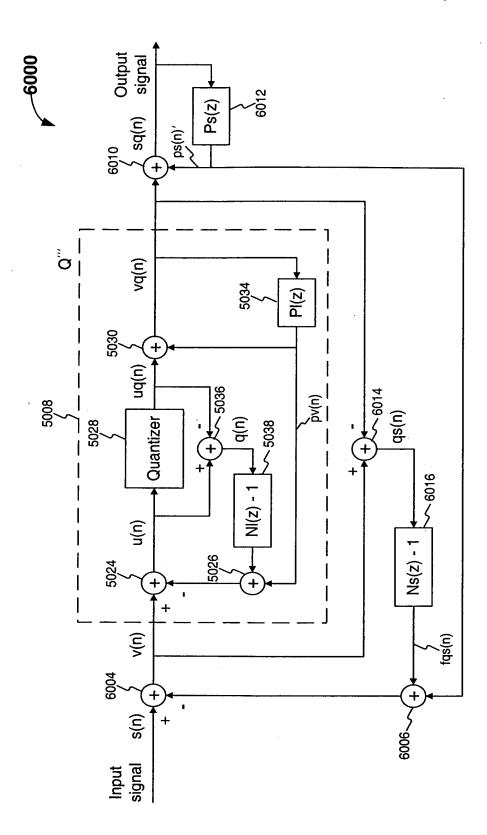


Figure 6 Another alternative nested two-stage Noise Feedback Coding structure with short-term and long-term prediction and short-term and long-term noise spectral shaping

Replacement Sheet Sheet 10 of 36 Appl. No. 10/084,503; Filed: Feb 28, 2002 Dkt No. 1875.1760001; Group Unit: 2626 Inventors: THYSSEN et al. Tel. No.: 202-371-2600

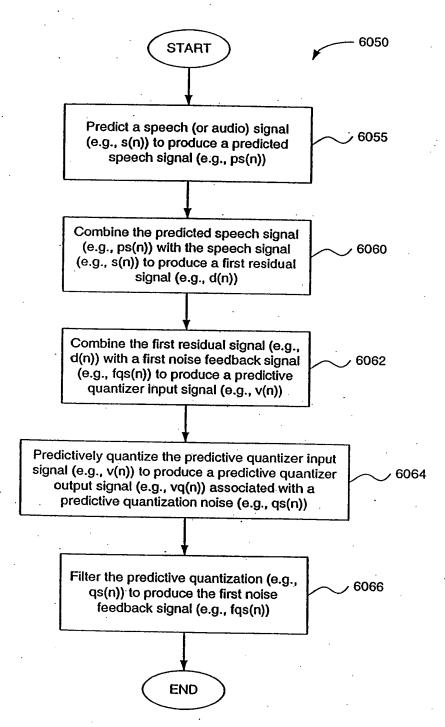
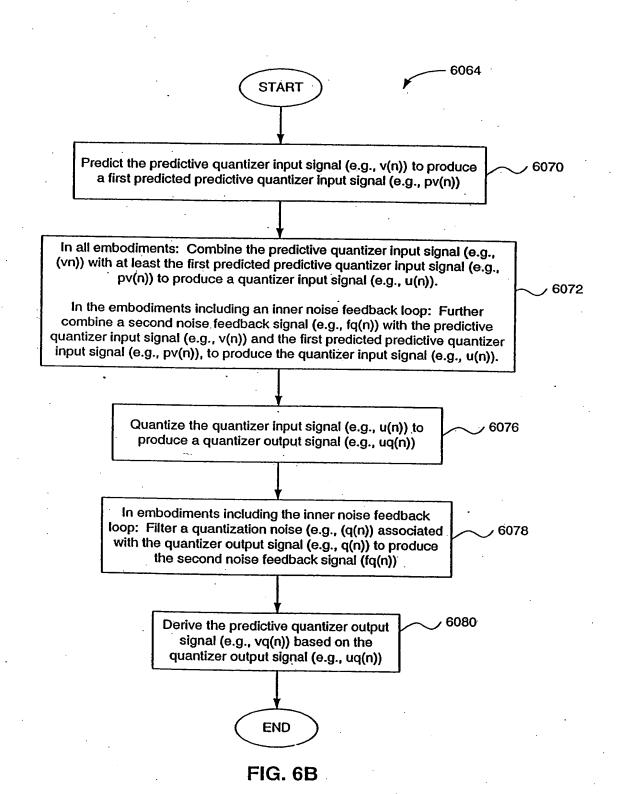


FIG. 6A

Replacement Sheet Sheet 11 of 36

Appl. No. 10/084,503; Filed: Feb 28, 2002 Dkt No. 1875.1760001; Group Unit: 2626

Inventors: THYSSEN et al. Tel. No.: 202-371-2600



Replacement Sheet Sheet 12 of 36 Appl. No. 10/084,503; Filed: Feb 28, 2002 Dkt No. 1875.1760001; Group Unit: 2626 Inventors: THYSSEN et al. Tel. No.: 202-371-2600

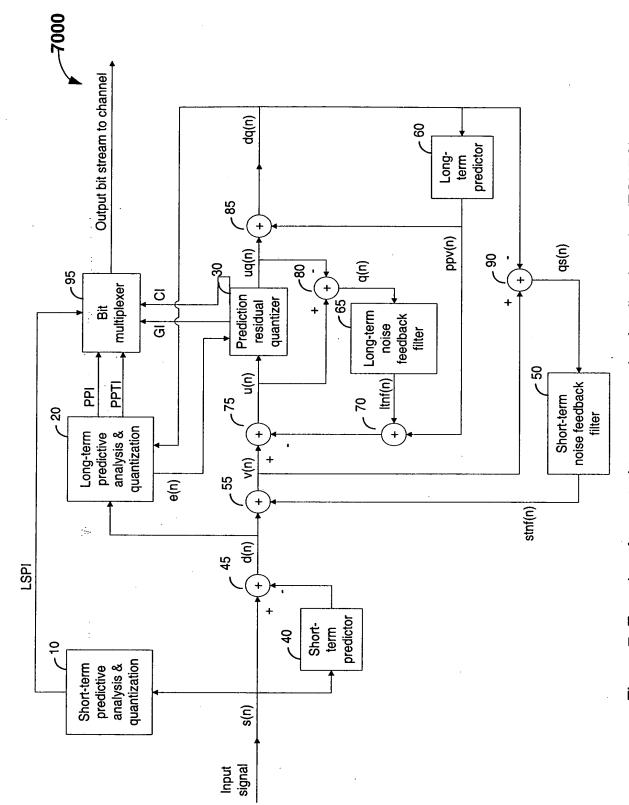


Figure 7 Encoder of a nested two-stage noise feedback codec (TSNFC)

Replacement Sheet Sheet 13 of 36

Sheet 13 of 36

Appl. No. 10/084,503; Filed: Feb 28, 2002

Dkt No. 1875.1760001; Group Unit: 2626

Inventors: THYSSEN et al.

Tel. No.: 202-371-2600

For: Efficient Excitation Quantization in a Noise Feedback

Coding System Using Correlation Techniques

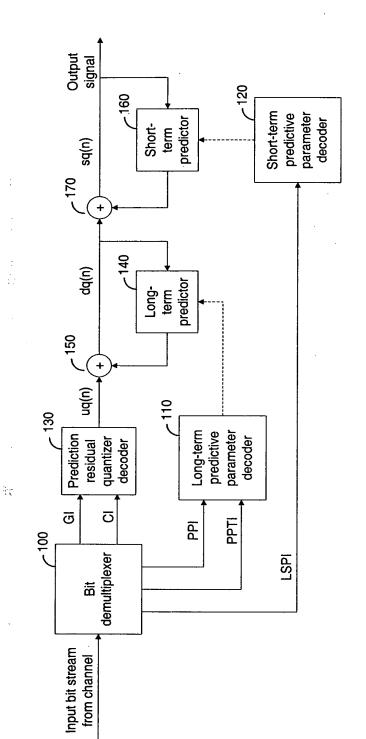


Figure 8 Decoder corresponding to the TSNFC encoder in Fig. 7

Replacement Sheet Sheet 14 of 36 Appl. No. 10/084,503; Filed: Feb 28, 2002 Dkt No. 1875.1760001; Group Unit: 2626 Inventors: THYSSEN et al. Tel. No.: 202-371-2600

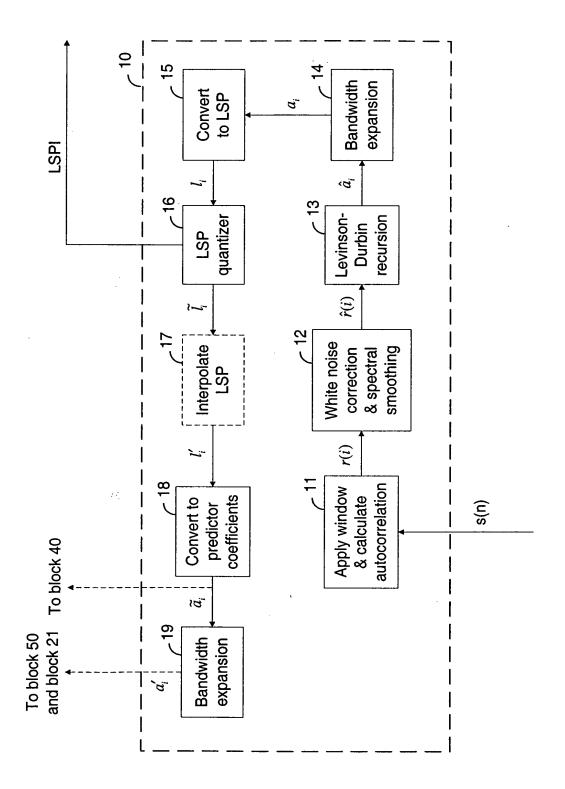


Figure 9 Short-term predictive analysis and quantization (block 10)

Replacement Sheet
Sheet 15 of 36
Appl. No. 10/084,503; Filed: Feb 28, 2002
Dkt No. 1875.1760001; Group Unit: 2626
Inventors: THYSSEN et al.
Tel. No.: 202-371-2600
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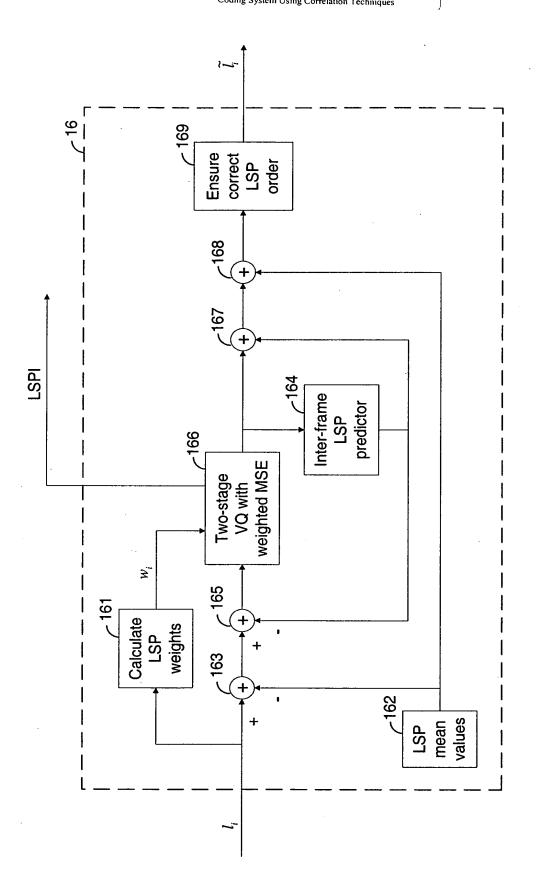


Figure 10 LSP quantizer (block 16)

Replacement Sheet

Replacement Sheet Sheet 16 of 36 Appl. No. 10/084,503; Filed: Feb 28, 2002 Dkt No. 1875.1760001; Group Unit: 2626 Inventors: THYSSEN et al.

Tel. No.: 202-371-2600

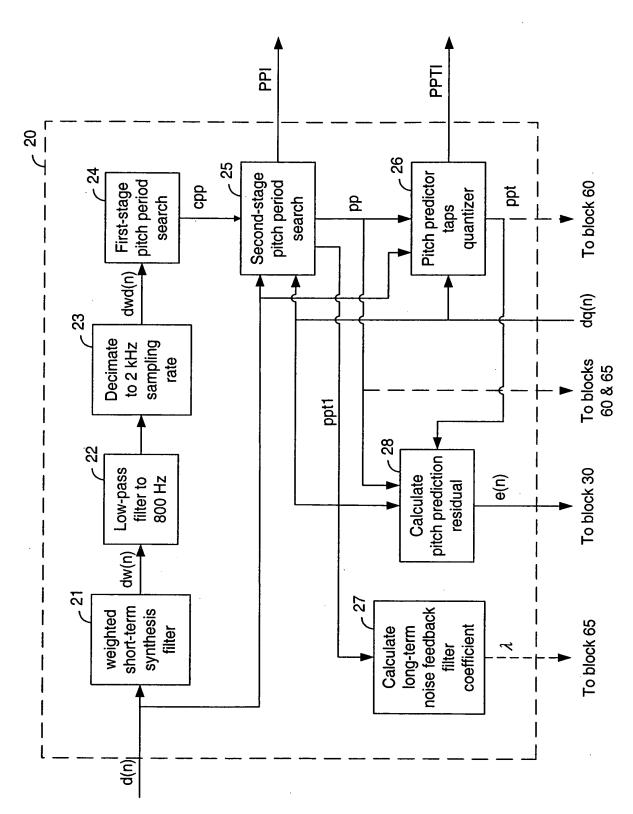
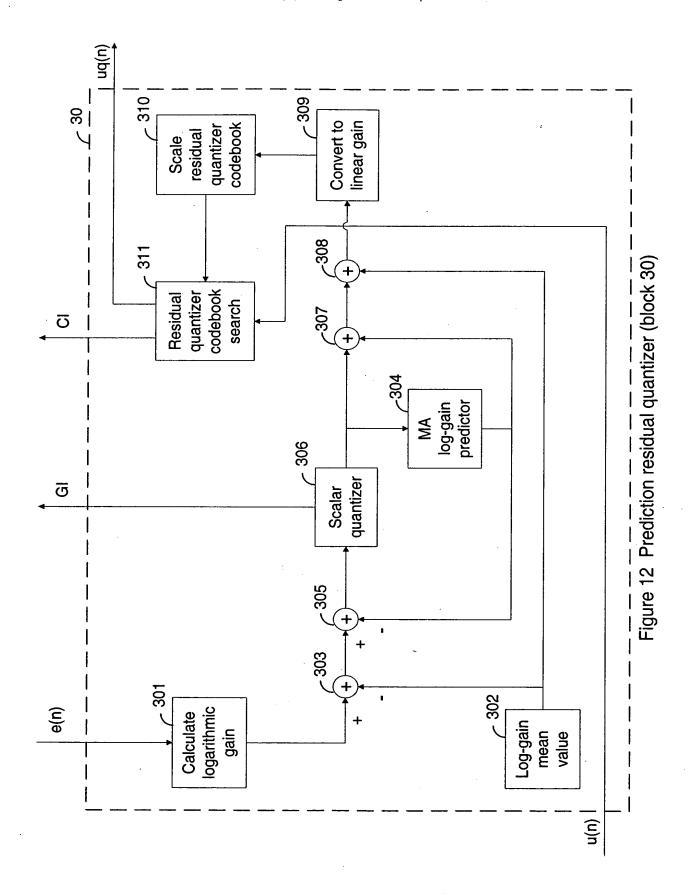
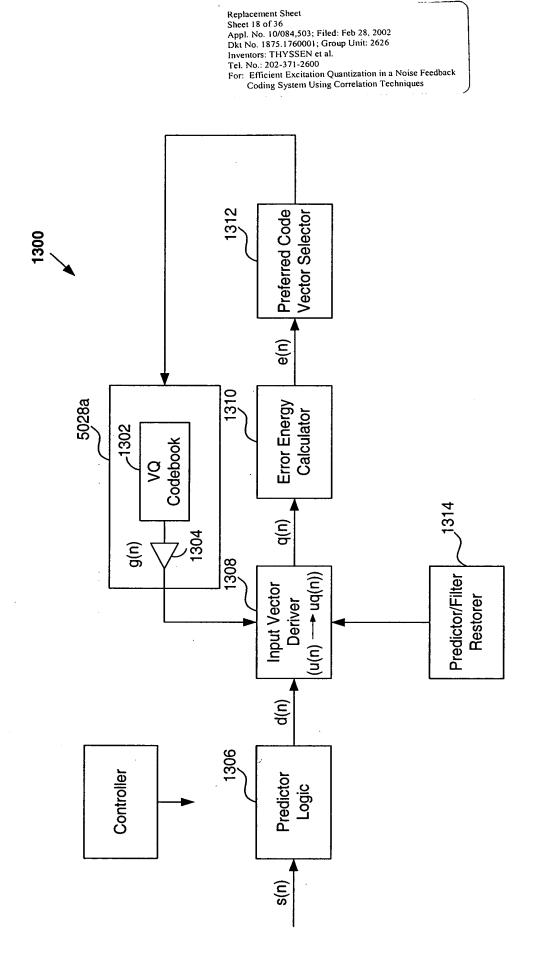


Figure 11 Long-term predictive analysis and quantization (block 20)

Replacement Sheet
Sheet 17 of 36
Appl. No. 10/084,503; Filed: Feb 28, 2002
Dkt No. 1875.1760001; Group Unit: 2626
Inventors: THYSSEN et al.
Tel. No.: 202-371-2600





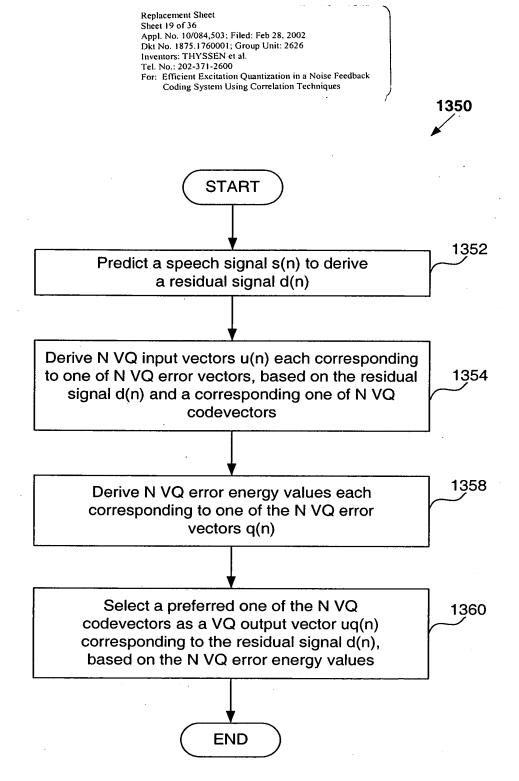
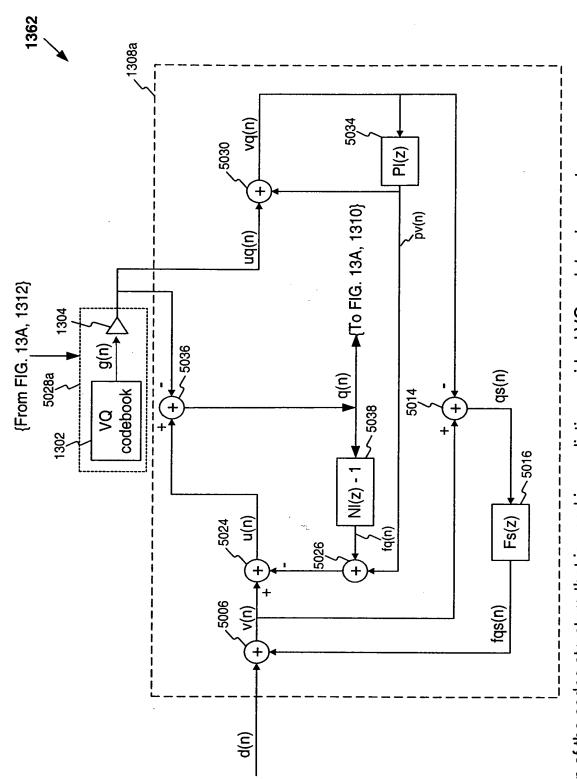


FIG. 13B

Replacement Sheet Sheet 20 of 36

Appl. No. 10/084,503; Filed: Feb 28, 2002
Dkt No. 1875.1760001; Group Unit: 2626
Inventors: THYSSEN et al.
Tel. No.: 202-371-2600
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The portion of the codec structure that is used in prediction residual VQ codebook search of the two-stage noise feedback codec of Fig. 5.

FIG. 13C

Replacement Sheet
Sheet 21 of 36
Appl. No. 10/084,503; Filed: Feb 28, 2002
Dkt No. 1875.1760001; Group Unit: 2626
Inventors: THYSSEN et al.
Tel. No.: 202-371-2600
For: Efficient Excitation Quantization in a Noise Feedback
Coding System Using Correlation Techniques

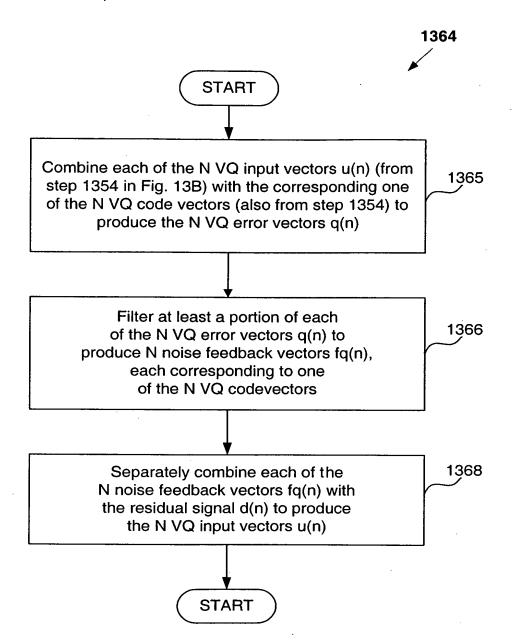


FIG. 13D

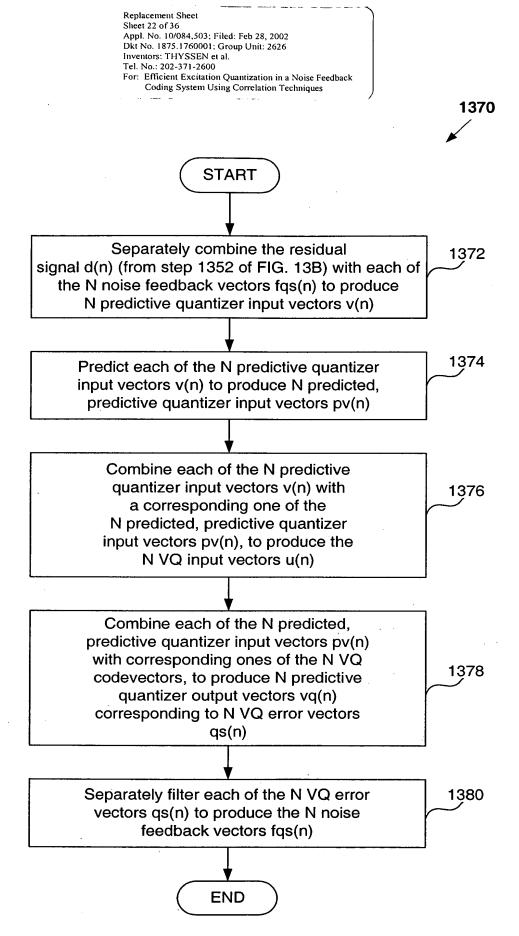


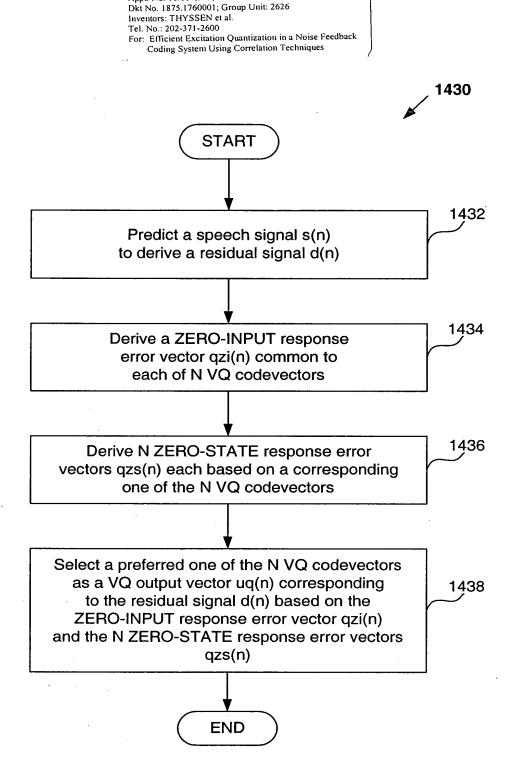
FIG. 13E

Predictor Logic

s(n)

Replacement Sheet Sheet 23 of 36 Appl. No. 10/084,503; Filed: Feb 28, 2002 Dkt No. 1875.1760001; Group Unit: 2626 Inventors: THYSSEN et al. Tel. No.: 202-371-2600

FIG. 14A

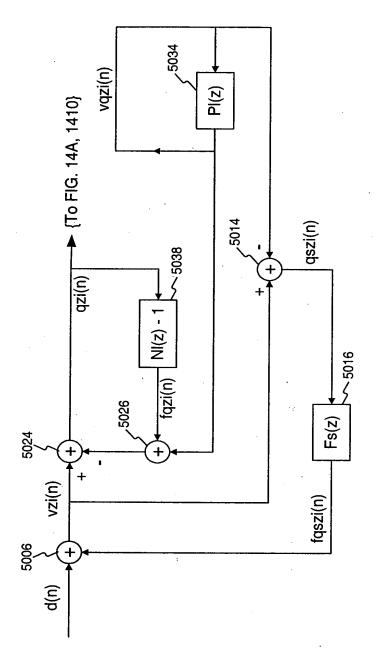


Replacement Sheet Sheet 24 of 36

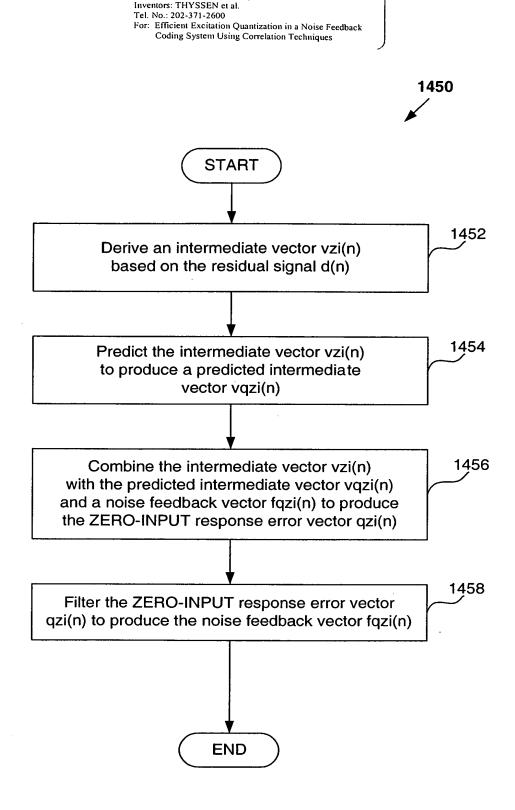
Appl. No. 10/084,503; Filed: Feb 28, 2002

FIG. 14B

Replacement Sheet
Sheet 25 of 36
Appl. No. 10/084,503; Filed: Feb 28, 2002
Dkt No. 1875.1760001; Group Unit: 2626
Inventors: THYSSEN et al.
Tel. No.: 202-371-2600
For: Efficient Excitation Quantization in a Noise Feedback
Coding System Using Correlation Techniques Coding System Using Correlation Techniques



Filter structure during the calculation of the zero-input response of q(n) of Fig. 13C.



Replacement Sheet Sheet 26 of 36

Appl. No. 10/084,503; Filed: Feb 28, 2002 Dkt No. 1875.1760001; Group Unit: 2626

FIG. 14D

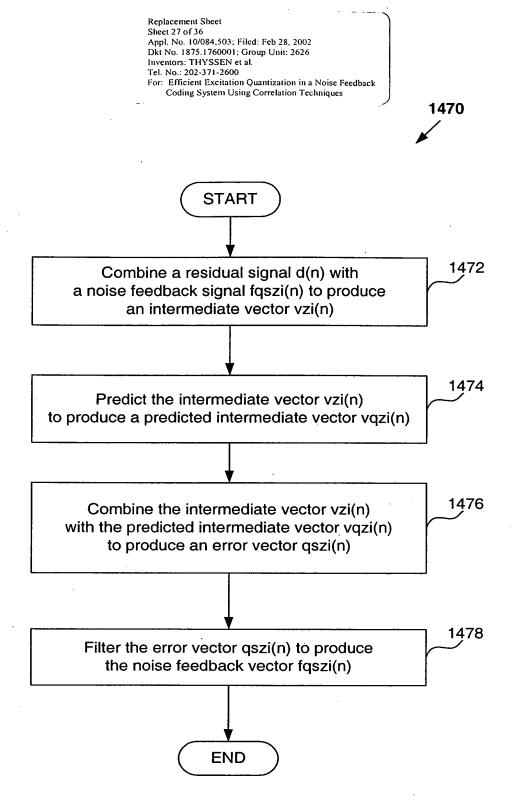
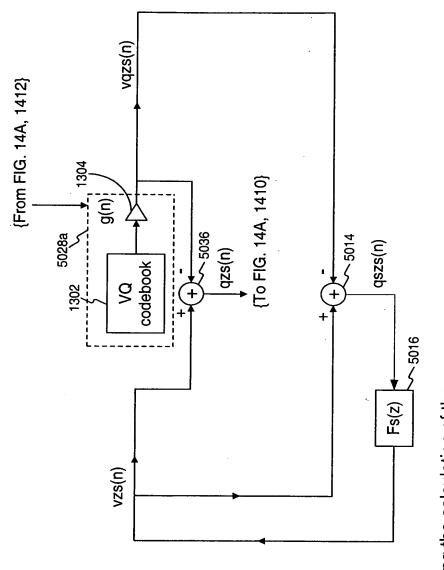


FIG. 14E

Replacement Sheet



Filter structure during the calculation of the zero-state response of q(n) in Fig. 13C.

1520 **START** Filter an error vector qszs(n) associated with each of the N VQ codevectors 1522 to produce a ZERO-STATE input vector vzs(n) corresponding to each of the N VQ codevectors Separately combine each ZERO-STATE 1524 input vector vzs(n) produced by the filter with the corresponding one of the N VQ codevectors, to produce the N ZERO-STATE response error vectors qzs(n) **START**

Replacement Sheet Sheet 29 of 36

Inventors: THYSSEN et al. Tel. No.: 202-371-2600

Appl. No. 10/084,503; Filed: Feb 28, 2002 Dkt No. 1875.1760001; Group Unit: 2626

FIG. 15B

Replacement Sheet
Sheet 30 of 36
Appl. No. 10/084.503; Filed: Feb 28, 2002
Dkt No. 1875.1760001; Group Unit: 2626
Inventors: THYSSEN et al.
Tel. No.: 202-371-2600
For: Efficient Excitation Quantization in a Noise Feedback
Coding System Using Correlation Techniques

→ {To FIG. 14A, 1410} dszs(n) = dzs(n)Fs(z) vzs(n) codebook

A filter structure equivalent to the structure in Fig. 15A.

1620 **START** Combine each of the N VQ codevectors 1622 with a corresponding one of N filtered, ZERO-STATE response error vectors vzs(n) to produce the N ZERO-STATE response error vectors qzs(n) Separately filter each of the N ZERO-STATE 1624 response error vectors qzs(n) to produce the N filtered, ZERO-STATE response error vectors vzs(n) **START**

Replacement Sheet Sheet 31 of 36

Inventors: THYSSEN et al. Tel. No.: 202-371-2600

Appl. No. 10/084,503; Filed: Feb 28, 2002 Dkt No. 1875.1760001; Group Unit: 2626

FIG. 16B

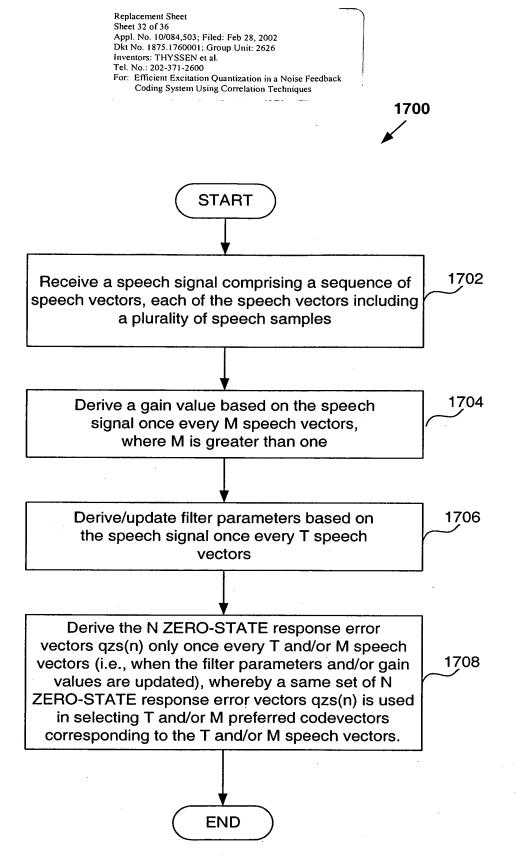


FIG. 17

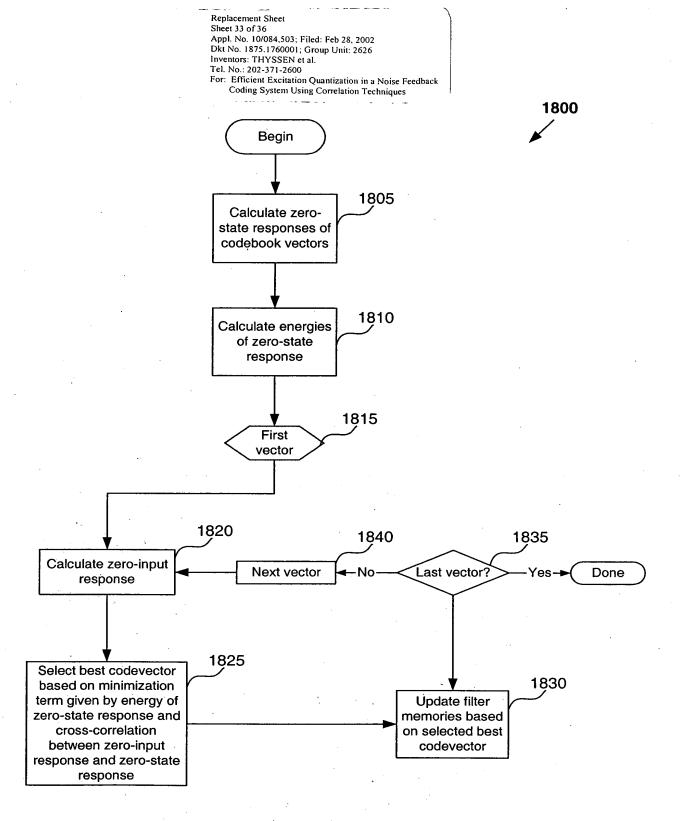


FIG. 18

Replacement Sheet
Sheet 34 of 36
Appl. No. 10/084,503; Filed: Feb 28, 2002
Dkt No. 1875.1760001: Group Unit: 2626
Inventors: THYSSEN et al.
Tel. No.: 202-371-2600
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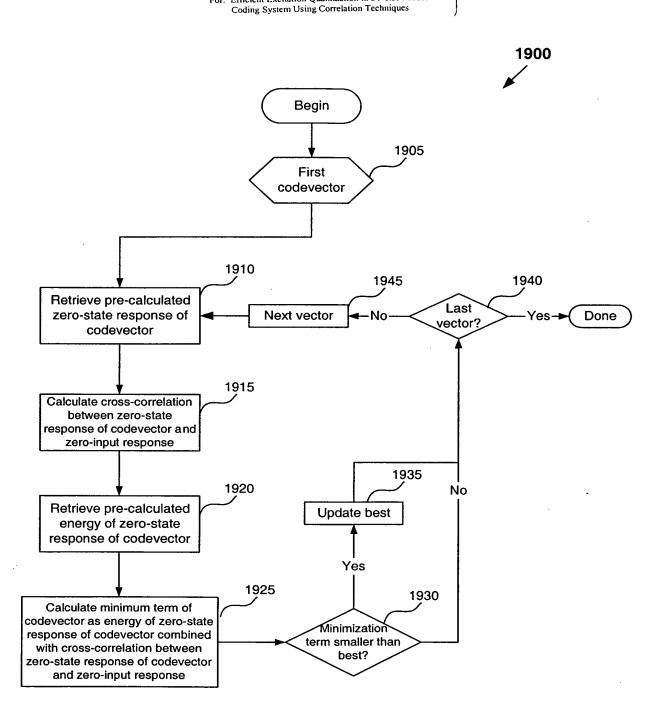


FIG. 19

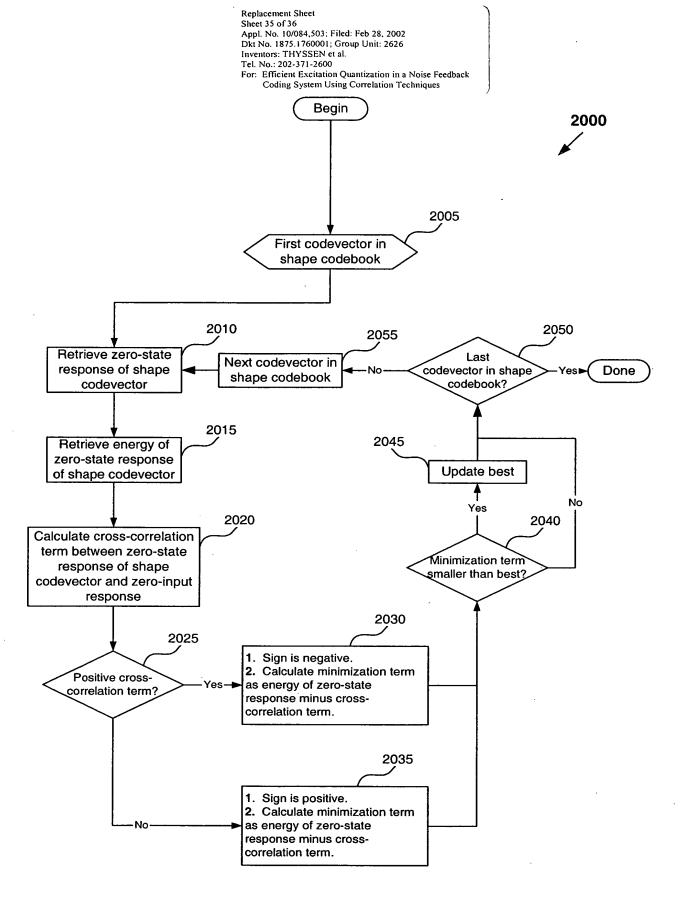


FIG. 20

Replacement Sheet Sheet 36 of 36

Appl. No. 10/084,503; Filed: Feb 28, 2002 Dkt No. 1875.1760001; Group Unit: 2626

Inventors: THYSSEN et al. Tel. No.: 202-371-2600

For: Efficient Excitation Quantization in a Noise Feedback Coding System Using Correlation Techniques

Computer System 2100

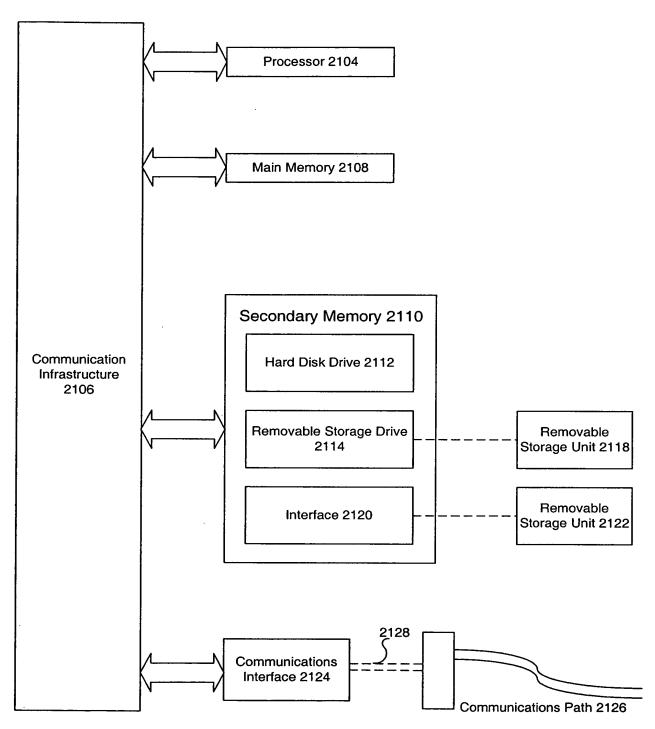


FIG. 21